

Canal Zone Notes
Book #5

#5

Wireless St.

Croces

Gorgona re

U. S. GEOLOGICAL SURVEY

GEOLOGIC BRANCH

LOOSE-LEAF FIELD NOTEBOOK

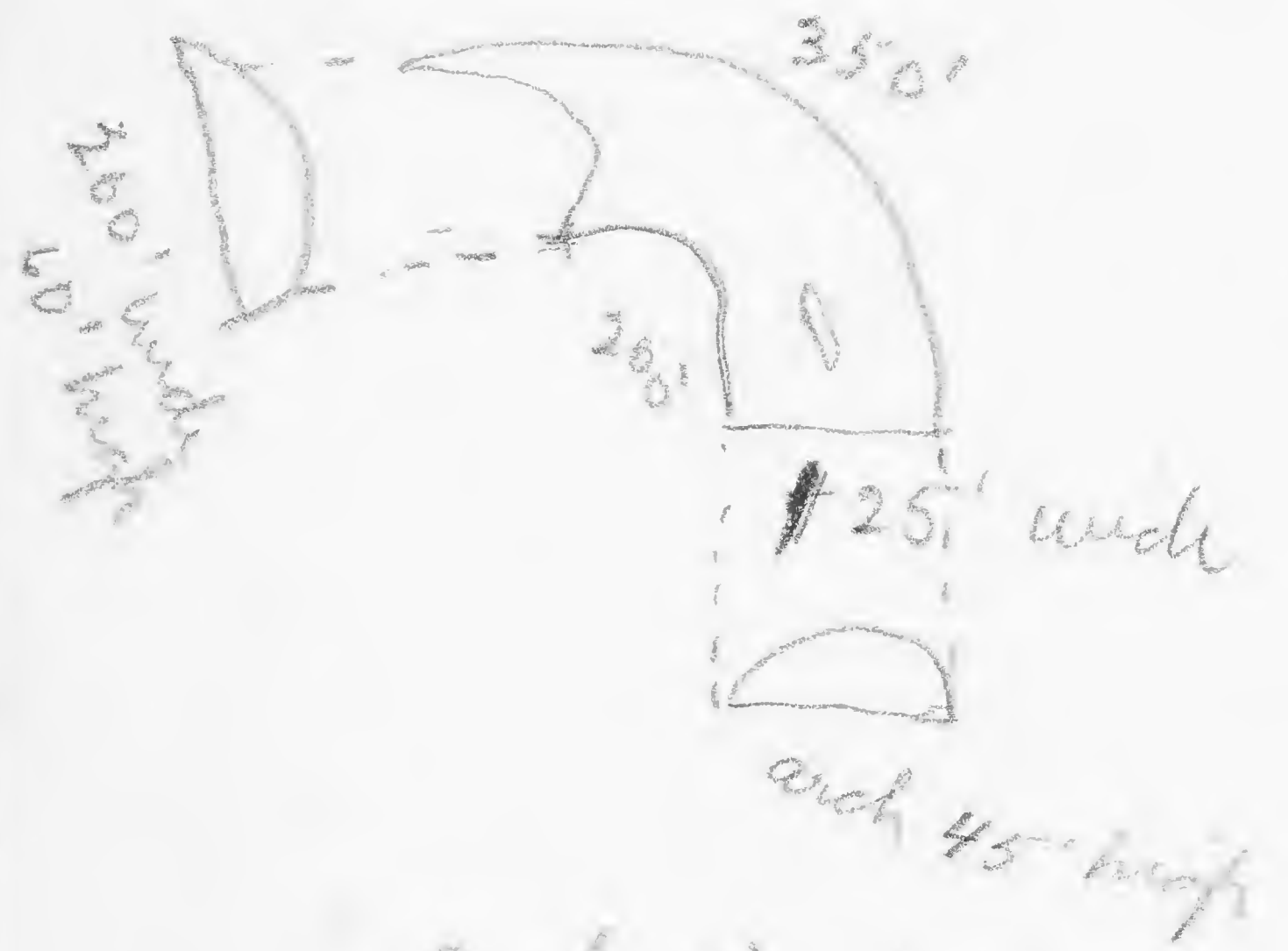
Canal Zone Notes
Book #5

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[Faint handwritten notes and sketches on the right page, including a diagram of a path or route with arrows and some illegible text.]

May 2nd went to see
 to all walls
 May 3rd went to see natural bridge
 at the Mente followed trail and
 found Saline and Fort La... out
 to find Savanna about 3 miles out
 then changed off to the trail and saw
 old sandstone, but big river...
 Guadalupe Del Rio creek about
 200 yards before reaching the first
 large limestone cave...
 Limestone all around cave and up
 alluvial... the savanna seen after...
 and... limestone... sample of...
 from 1st and 2nd...
 from... the...
 ground... of the...
 the... place...
 heavy growth of small trees...
 vines...
 Limestone... for...
 for... the...
 rocks... where
 there are savannas...
 are... but these...

to the river only arranged custom edges, some
 natural bridge on the Puente
 river



Arch dissolved out of the
 coral limestone found all down
 river from where trail crosses
 and back 1 1/4 miles on trail
 from river. The limestone is mostly
 brown water deposition and is very soft
 to walk on. Many small specimens

Project collected fossils as follows

- #1 Across bridge river opp. alhambra
 lining tops of rock walls very prominent
 fossils. Fossils of this area about 200 ft
 225 feet above the river
- #2 Taken 1/2 mile down river below bridge
 1/2 mile down river. Fossils of this area
 down river. The fossils are about 200
 300 feet down river. Fossils of this area
 very small and very soft. Fossils of this area
 many large fossils. Fossils of this area
- #3 500 feet below the river
- #4 In the good coral limestone with some
 fossils. Fossils of this area are about 200
 300 feet below the river. Fossils of this area
 are about 200 feet below the river. Fossils of this area
- #5 Taken on way 25 feet below #4 very
 hard rock. Many fossils which have
 been dissolved by the river into many
 odd shapes and are scattered
 about. The water is very muddy
 and appears. Part of large fossils

more about 1 foot thick together and
 pebbles here are now plentiful but
 the rock is so hard and the shells
 so brittle that it is very difficult
 to get them out good after every
 hammer.

There is a great deal of material in
 the place to be used in the
 construction of a road.

There is a large hole in the ground
 which is full of water and is
 very deep. It is very hard to
 get out of the water and is very
 deep.

There is a large hole in the ground
 which is full of water and is
 very deep. It is very hard to
 get out of the water and is very
 deep.

May 11th

From the high ridge above the
 hill to the top of the hill and
 down to the bottom of the hill
 the rock is very hard and the
 shells are very brittle. It is
 very difficult to get them out
 good after every hammer.

There is a large hole in the ground
 which is full of water and is
 very deep. It is very hard to
 get out of the water and is very
 deep.

There is a large hole in the ground
 which is full of water and is
 very deep. It is very hard to
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 deep.

There is a large hole in the ground
 which is full of water and is
 very deep. It is very hard to
 get out of the water and is very
 deep.

just beyond 900, about 7/14 cap
 carbon low less - buff to brown
 S.S. fine grained, white
 sand, fine grained, white

May 15th Point
 sand - white, brown, or grey
 brown, fine grained, 20 - 30 ft
 point - about 4 ft

May 16th Point two

Quarry in shell & coral formation, some
 made out as road in breakfast

sample for analysis
 locally shows crossbedding, in section
 about shore, about high tide, in some
 places, this is almost vertical
 enough to be taken for an unconformity
 but it is interrupted by great size of former
 wave action on coral reefs before final
 deposition

Locally lenses of argillaceous shale
 in this formation, these form 3 caps
 to the first terrace and not very extensive
 locally

from 100 ft to 200 ft
 (1) Highest High water level

(2) about 5 feet above present
shore level - large swimming
area here as at present beach
and dune.

(3) about 50 to 55 feet above
present sea level as on top
of present low ridge now
being quarried.

Locally well rounded shore cluffs
some of this material looks
gray and somewhat sandy, not
much unlike the older formations
but certainly more heavy.

Feb 8th 1914

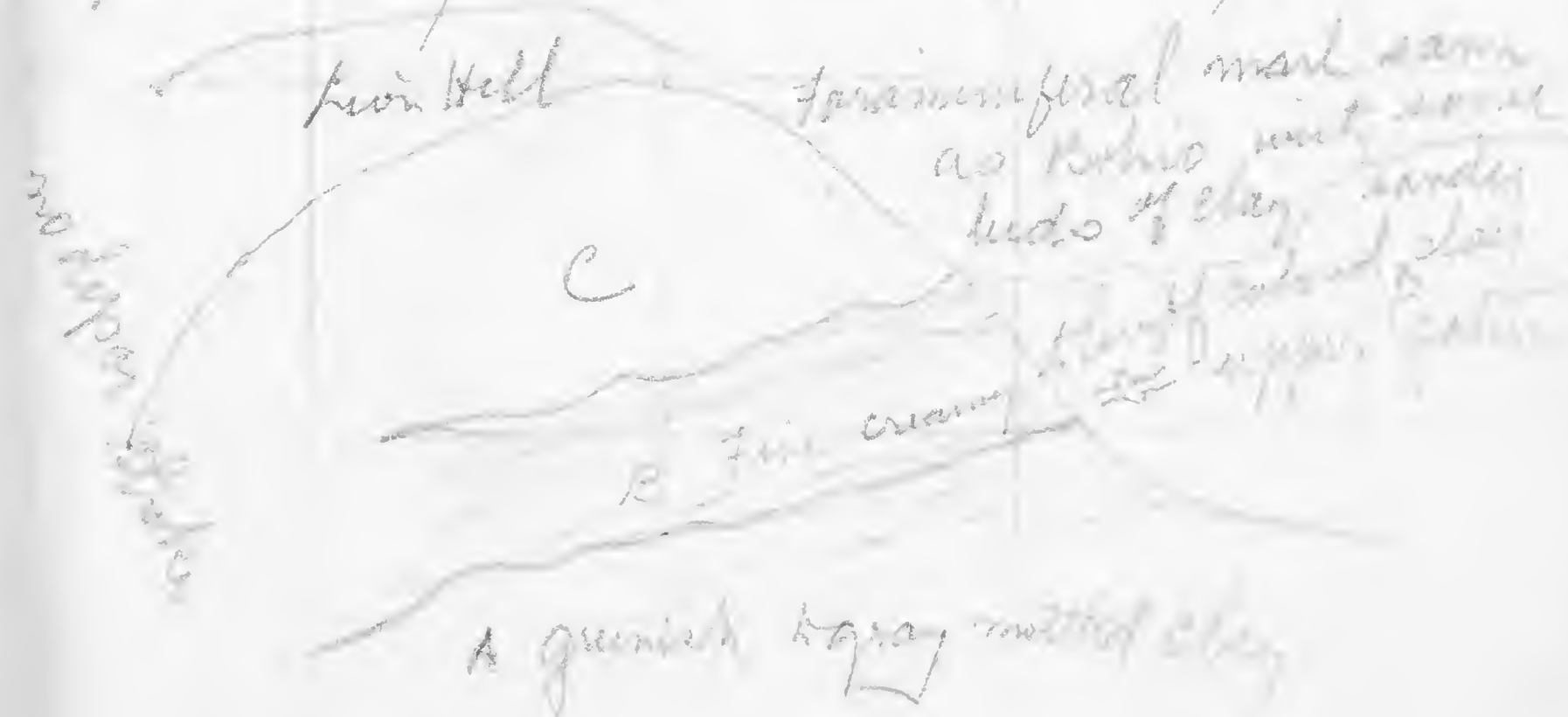
Got off train at Uluva Kappata
and followed railroad to Station.

Some cuts up to feet deep just S
of Uluva Kappata show nothing but
thin bedded fine red rock.

Southern edge of Lion Hill and
N of black swamps thick shales
volcanic looking basic light green
greenish clay with mottled iron.

Sp. oxide spots. This clay is thin
bedded on surface and is
practically horizontal.

Lion Hill found trail up side of it
partway then climbed it top.



Spec 298?

Bridge
" "

Here on road on
Spec F from road
2nd level
from bridge
straight away.

Foraminiferal sandstone is
dips northward say 8°
all the below may be more or less
interbedded

- 4 Fine foraminiferal sandstone
basic and somewhat decomposed
- 3 Dark basic coarse foraminiferal
sandstone (Basic)
- 2 Light gray light buff white clayey
sandstone beds
- 1 Fine basic agglomeratic material
in sandstone fragments show
clearly and are decomposed

Fine conglomerate material ss. beds

There seems to be a transition from
sandstone into sandstone with flat
basic particles not joined ^{together}
volcanic agglomerate. This is
shown at corner of hill, road
cut "

Here on left side
of track on top of this mound is
sandy clay. Then have foraminiferal
sandstone and mud beds. Some
of the beds immediately on top of this
are very light colored near their
outcrop.

Rocks here dip toward S. about
due N at say 8° or 9°

Succession today might be called
foraminiferal sandstone series

Side of trail to Bahia three marked ridges
near Olvera Lagarta

Ridge just south of Olvera Lagarta is
light colored limy material sandstone
locally quite hard. Bedding nearly
horizontal

By following up this ridge towards east
find light colored limy sandstone all the
way to top P.B.M. 14A El 134,233

Ridge just north from Bahia is
all conglomerate

more than 100 feet thick
all conglomerate
at least 100 feet thick and more

Cores from Dock bearings Hall's
Dry Dock Co

Center Line of Dry Dock

EL +24 Rock +23 Depth -25

A Hole same as hole E

B Hole EL +19.6 Rock -4.4 Depth -4.6
Same as E - not much decomposed.

C Hole EL +19.1 Sand depth 11.1
Rock at +10.1
all very dark and similar same
as sample from ~~from~~ from Well
just below here.
Bottom of hole = (-65)

EL +19.1 Rock +14.8 Depth -6.6
D Same as E hole fairly decomposed
flashes with many grey specks

EL +16.4 Rock -10.6 Depth -6.6

E Same as hole C but very much decomposed
flashes white and matrix very grey
bluff.

EL +17.7 Rock at -10.3
Depth -6.5

F Same as hole C but with
more material at the bottom and
very dark sand at bottom

24

Holes

1. Same as C
 EL + 14.8 Rock + 11.2 Depth - 4.52

2. EL + 19.3 Rock + 11.2 Depth - 3.35

3. Same as C

4. EL + 20.3 Rock + 17.0 Depth - 4.4

5. Same as C

6. Same as C EL + 20.3 Rock + 17.0 Depth - 4.4
 (chip taken on side)

7. EL + 19.4 Rock + 14.4 Depth - 4.1

8. Same as C

9. Same as C EL + 19 Rock + 14.4 Depth - 4.4

10. EL + 15.5 Rock + 11.2 Depth - 3.9

11. Same as C

EL + 19.4 Rock + 12.2 Depth - 4.4

Same as C

Same as C
 EL + 19.4 Rock + 15.2 Depth - 2.7

Same as 9
 EL + 18.4 Rock + 10.4 Depth - 2.8

Same as 10
 EL + 19.4 Rock + 17.2 Depth - 4.3

EL + 18.4 Rock + 6.4 Depth - 4.0

Same as C. Core cut from
 about 1/2 way down. Below core shows
 weathering of the rock.

Same as 10
 EL + 19.4 Rock + 14.4 Depth - 3.5

EL + 15.5 Rock + 11.2 Depth - 3.9
 Same as C. But very highly weathered
 surface white, interior gray
 bluish colored

15 El +14.2 Rock +13.3 depth -40
 Spots, some 20 14 (W)

16 El +14.1 Rock +3.6 depth -33.2

17 El +14.9 Rock -3.1 depth -40.4
 Same as 15 spots

18 El +14.6 Rock +3.7 depth -40.2
 Highly vitrified products of spots, some
 much as of C hole. Some thin, some
 much weathered with small spots 2' from
 surface. Some of rock fragments white, some
 orange light grey, some black.

19 El +14.9 depth -38.6
 Rock -11.2
 Rock spots, some as of hole
 about same weathering

22 Same as hole C not described
 El +13.1 Rock -13 depth -37.2

at 5 This plat has a very shallow soil cover, a few inches to a foot or two, then gray, green-colored, low hills, rounded then irregular in shape, rounded on top, but would round to the sides, a good foundation for a building, after the the light foundation and soil is left in the dirt at Babylon.

#6 Same as #5 with one piece of basaltic glass on the ground, shovels, which may be a dike, but this will show the nature of the soil.

#7 Same as the conglomerate and #5. Little or none in sight. 2. Brown, a few top of hill, light gray, etc.

3. Same as #5. 4. Same as #5. 5. Same as #5. 6. Same as #5. 7. Same as #5. 8. Same as #5. 9. Same as #5. 10. Same as #5. 11. Same as #5. 12. Same as #5. 13. Same as #5. 14. Same as #5. 15. Same as #5. 16. Same as #5. 17. Same as #5. 18. Same as #5. 19. Same as #5. 20. Same as #5. 21. Same as #5. 22. Same as #5. 23. Same as #5. 24. Same as #5. 25. Same as #5.

Sunday March 10th 1912
Went up Ballou Hill

Succession from Gargona white tuff
ludo showing specks of ferro-mag.
minerals and these underlying
Conglomerate ludo and clays

On top of this are foraminiferal
limestones just same as succession
at wireless station

Ballou Hill and other hills
are due to intrusions of
very dark dense basalt

I note that some of these
sharp peaks are in line
as though they represent
dikes which locally show
ricks

Friday March 5th 1909. Went out
on morning survey of limits of
marked local work in that general
vicinity.

- (1) Small dark gray limestone from
limits and coarse boulders
having many small flake
fragments. Kipps 1450 ± 50' SW.
Small dark gray limestone
with small dark gray limestone
(2) The limit is coarse, dark blue
massive, boulders below
them (1450) in masses (1450)
Kipps.

- (3) Limestone here is quite sandy so that
the product is a limy sandstone.
This fault well banded and dips
12° N. W.

- #4 Like of dark basaltic rock into sandstone
here and at contact has produced
brecciated zone at contact of 20 feet or
more. Locally this breccia contains
small and large angular fragments
of the intruded dike rock cemented
in a matrix of meta limestone.

Mar. 15 cont.

This brecciated zone is 20' wide on the S ~~and~~ W side of R.R. but is much narrower say 12' on S & E side. This brecciated zone is then locally enlarged a sort of local phenomenon. Rocks along all contacts seem blue some. This brecciated zone seems like connecting link between which shows that Contractors Hill Empire bridge and other breccias are the broken crowns of big intrusions.

5) Coarse lava conglomerate similar to that at Cincts point.

6) San Pablo formation on east or west of this hill. And outcrops about 1/2 mile.

7) Very light - weathered bedded clay sea the unweathered product of which is blue clay and rather coarse and crumbly. Is derived from basic rocks and is not the same as that found near Cincts point. Dip about 15° west and seems hardly San Pablo formation.

(5) Hard dark basaltic dike cutting
 spe coarse basic, waxy and clay beds
 Just S of this dike the beds are
 darkish coarse and very basic.
 There is a little bedding but the
 material was laid down
 in rather massive form. It was
 probably derived from nearby andesites
 or gabbros and deposited with
 very little sorting and weathering.
 This coarse dark basic material seems
 like the same as the dark basic granitic
 beds found on the east side of
 Mt. Trigler.

(9) Sharp ridge one about 200 feet high
 due to dark hard dike similar to
 that at (8) but mostly to sand.

Sat. March 10. 1923. After morning
expedition to New England.

- (1) Cut 1 mile N. of New England. Conglomerate
layers with inter beds of Wayne
pebbles and cobbles in this cut.
are mostly of the coarse hornblende-por-
phyre showing very little quartz. The fine
bedded Wayne shows some hornblende
fragments but very little quartz so
that it is much less quartzitic
than the Wayne found at Liberty
junction. Still still these rounded
boulders and cobbles seem to be
of the same general character
as those in lower part of the
Wayne so will classify this
same as that.

Dip 40° S. About 300' of beds
exposed in this 1st cut. Largest
boulder noted about 2 ft in diam.

- (2) Light colored clay considerably weathered
and shows little bedding. This would seem
at first to be classed in with the sandstone
series although it seems to be under it.

- (3) Gray coarse sandy marl shows many
foraminifera and is same as that
found near Bahia. Fairly well
bedded dip 40° SW.

(1) East basic much ahead of the mass
or rather seems like sort of base
or neck for it appears on the E side of
railroad only. Seems like a head of
more basic for it shows considerable
serpentinization with secondary calcite
spedals. In fact of culvert 1910

B.M. on culvert 101.10 is 350 wide
Almost fills the space between culverts
1910 on S and 1909 on N side

Off take 766 on W side of track

a dark basic breccia zone shows up
in cut. This is evidence that the
hill which rises up west of the cut
here (practically no embankment for the
east here) is due to an elongated
plug of this breccia and that the
outer brecciated zone of it
shows in the cut

Succession at bridge (road 7) 742

1. Limestone

2. Blue shale - thin, 750

3. Conglomerate (well bedded)
purple, calcareous

March 18th Camp

located by limestone. Some other
some kind of volcanic material is
found at 2/4, a mile away
here. Flashed 5 of them as all
good limestone.

(9) scattered fragments of small fossils
mostly of 1/2 inch diameter & found
in low cut - mostly limestone.

(10) some very hard, dark & somewhat

(11) along shore there is little clay but
which is not in the way of any
to ^{cut} ~~cut~~ of it. In fact, however, they are
250 ft. back to 1/2 mile and in
west side some little what small but
they are very 1/2 inch high and very
mostly 1/2 inch high and in the
bottom of the

(12) Clay very fine, uniform, & very
fine, in fact, very fine, uniform
fragments of what is called
clay, in fact, in fact, in fact
clay, in fact, in fact, in fact
quite recent.

(13) At some time gray to dark gray
shale. These fossils are found
badly preserved fragments and they are
the same as the fossils found in the
limestone.

P. 61. 05

10

14

Cut of dirt road, being looking
for a good place to build a
very small house. Spoke shipped
to work. Last shipment, see
on about 100. Location, there
brown to water, about 1/2 mile
from road, as found in creek
bottom, hundred feet or more.

Sum. 1000 ft. or more, 1/2 mile
from road, 1/2 mile from creek
bottom, as found in creek
bottom, hundred feet or more.
Location, there brown to water,
about 1/2 mile from road, as found
in creek bottom, hundred feet or more.

15

At 1000 ft. or more, 1/2 mile
from road, 1/2 mile from creek
bottom, as found in creek
bottom, hundred feet or more.
Location, there brown to water,
about 1/2 mile from road, as found
in creek bottom, hundred feet or more.

Sum. 1000 ft. or more, 1/2 mile
from road, 1/2 mile from creek
bottom, as found in creek
bottom, hundred feet or more.
Location, there brown to water,
about 1/2 mile from road, as found
in creek bottom, hundred feet or more.

March 19

Morning Elgarth

Left the water with the boat
point

(1)

Very wet ground in the center of the
area. The ground is very wet and
the water is very muddy. The water is
very muddy and the ground is very wet.
The water is very muddy and the ground
is very wet. The water is very muddy
and the ground is very wet. The water
is very muddy and the ground is very
wet. The water is very muddy and the
ground is very wet. The water is very
muddy and the ground is very wet.

(2)

The water is very muddy and the ground
is very wet. The water is very muddy
and the ground is very wet. The water
is very muddy and the ground is very
wet. The water is very muddy and the
ground is very wet. The water is very
muddy and the ground is very wet. The
water is very muddy and the ground is
very wet. The water is very muddy and
the ground is very wet. The water is
very muddy and the ground is very wet.

Spec

(3)

The water is very muddy and the ground
is very wet. The water is very muddy
and the ground is very wet. The water
is very muddy and the ground is very
wet. The water is very muddy and the
ground is very wet. The water is very
muddy and the ground is very wet. The
water is very muddy and the ground is
very wet. The water is very muddy and
the ground is very wet. The water is
very muddy and the ground is very wet.

(4) Ganglioneuroma all along here shows in all

March 20 out on express to Dump 6

- (5) Dump 6 on the north of lower here conglomerate bank cut by slide (basic) about 3 feet thick. This conglomerate all along here contains considerable fine material and gravel, cobbles and boulders up to 30" in diam. some rough bedding with dip mostly approx parallel to surface of ridge cut through cobbles and boulders mostly dark and basic with some few fragments showing hornblende nodules plagioclase etc.

about 1000' S of ST 1195

Spec This conglomerate extends far in eastward of track as shown where dump stands in $\frac{1}{2}$ mile to cut in slope which shows same conglomerate

ST 1150 same conglomerate but along here there are some angular and subangular fragments however it seems to be all the same general series

This same formation extends right

up to Cimarron Junction.

- (1) Bailamons good big outcrops of limestone all along there. Dip about 10° W. L.S. shows some sea urchins & and

Specimens locally is gray and sandy on fracture. Seems to be same L.S. as is found at Las Cascadas & up Chaparral. Locally shows X bedding.

- (2) Congl begins here. L.S. does not go up above 75 ft or less and congl starts up through NW.

- (3) Just S of Maneri in RR cut along curve 500 from switch big mass of hard dark Basalt or Gabbro in contact with gray fossiliferous limestone and some light weathered beds with lentic fragments and some small fragments of fus - mag. Crinoids, and this seems to overlie the conglomerate series. Relations are not very clear here. Mta - has been

very considerable probably
interruption for 20' or so.

Spec's

March 21st afternoon in office
 waiting for mail from

March 22nd Monday (Spring 1894)
 morning waiting for mail from

(1) In Oregon all along here are banded
 conglomerates not associated with a
 matrix of clay which may be
 dark and heavy or light gray
 and in some the white
 clay is visible in the

This formation is composed
 of fine conglomerate and
 sand, mud, etc.

Some of the banded
 dark and heavy conglomerate
 is ~~seen~~ ^{seen} in the
 light and heavy conglomerate
 which is lighter colored
 clay conglomerate locally found
 and is rare in the
 banded area

(2) up near the top of the
 clay conglomerate is a
 layer of conglomerate which
 is not banded and is
 found in the top of the

(3) This hill seems to be about 200 ft high
On top of it I find fragments
of hard brown sandy, weathered
very light colored material
maybe also some large fragments
of the same basic material
or gabbro. This is very
difficult to identify. I am
not certain whether it represents
the same or Conglomerate or
but it probably does. It
does this probably only the
top 200 ft of the hill
the rest of the hill is
white conglomerate or
other

(4) Conglomerate bed is from 10 ft high
in gray clay like - "white"
This seems to be all you can see
and some light clay like

5- This seems to be the same source
as the other conglomerate and some
agglomerate looking dark boulders
stratified material. These two beds
are weathered rather gray and
locally might be mistaken for
material found in top of hill
(3)

200 feet south of 01 find long linear
masses and local dikes. Some beds
having probably a little soft, silty
or even micaceous impurities.

This linearized mass seems to be
divided up into sections separated
by thin zones of sandstone and
shale just as at Empire and
noted one small local dike
some of these linear masses
especially near contact are
quite rich with iron.

Saturday March 23d left camp
in morning

Cruiser is built on a gravel bar
only 30 feet above the river (mostly
with water) bar 75 feet above
river. This latter bar is the
look for some distance for
the town and separation
old river bank.

In the distance - a few scattered
houses and last night
the wind was blowing
strongly. Some in distance
a few more houses and
Dundee. At this
moment, rain is falling
just under mountain at
last night.

Monday March 21st
 through Caliche & gravel. No bones
 in the house.

Tuesday March 22/19. The morning
 H. H. H. worked. Found a few bones.

- (1) Out 1/4 mile south of collection. Conglomerate
 looks some like gravel. Contains
 but no bones. Out of date of bones. 15
 feet wide which covers 100 yards
 in all. 100 ft. deep.

- (2) Small bones found in gravel. Found
 bones in gravel. 100 ft. deep. 100 ft. wide.
 Out of date of bones. 15 feet wide which
 covers 100 yards in all. 100 ft. deep.

- (3) Parabolic like cutting in gravel.
 Corral in N.E. cut.

- (4) High, 200 ft. high. 100 ft. wide.
 Contains bones. 100 ft. deep. 100 ft. wide.
 Out of date of bones. 15 feet wide which
 covers 100 yards in all. 100 ft. deep.

100 ft. high. 100 ft. wide. 100 ft. deep.

(5) *Volcanic Breccia*

(6) Light colored lava flows here similar to that found in the East in several places. Seems like an outcrop of a tilted edge or possibly an elongated rock 100' wide.

(7) Lava breccia flows here are cut. Some are found up in volcanic belt 300 ft wide or so.

March 28/10 La Brea Coal
mine.

Found old holes & pits. No
surface indications.
all grown up with brush.
In streams nearly nothing
all large angular pieces
of brush.

At La Brea St gravel
& clay of latest Conglomerate.
At Borteco = bridge bed
dip away from San Pablo
formation outcrop to top
of bank.

June 8th 1914 Out on
 ridge west of station down
 A.T. St. bears N79E to
 sharp curve out of elevated line
 1/2 mile S. of station.
 and S33E to big curve in canal
 A station triangulation st

Fault trends ~~to~~ E N W ^{NOW.}
 or Shear zone later on E
 Caprina on W. Extensive
 fracturing

Fossil lot # from new
 excavations west of station
 some pebbles along
 contact but no noticeable
 unconformity

Monday Jan 10. B. B. Bluffs through
out fragments in B. B. Bluffs mostly
at rounded boulders for miles
all over the same and spangled
all over same composition but
much weathered compositionally
Along some of the major fissures soap
has been deposited from water vapor
TC perhaps hydrothermal action
mostly pebbles same as coarse
dark basic granitic boulders
apex + some hydrothermal action
has left considerable calcite and
spherulitic boulders
showed with very probably
hydrothermal action
a lot of calcite along nearly all fissures
in sedimentary rocks. Boulders of
large calcite also common

Rates for business printing
 \$30 per 1000 letters for 1000 lines and 100
 \$1.00 per day for 1000 lines and 100
 \$1.00 per day for 1000 lines and 100
 Business printing as above

84

7

13

37

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